treated with antibiotics were excluded. Analysis was restricted to those patient visitation cared by physician specialty with general practice, family practice, and internal medicine. Multivariate logit regression analysis was performed to assess the relationship between patient insurance status and the prescribing of broad-spectrum antibiotics controlling for age, gender, race and ethnicity, physician specialty, and comorbidities. **RESULTS:** Of 851 adults patients care for ARTI, 38% were prescribed one or more broad-spectrum antibiotics. In multivariate regression analysis, compared to those with private insurance, those with Medicaid, a public insurance program for low-income Americans, was associated with lower likelihood of prescribing of broad-spectrum antibiotics (adjusted odds ratio (OR) 0.496, p = 0.003), so were those without health insurance (adjusted OR 0.499, p = 0.028), and those with Medicare, a public insurance program for the elderly or disabled adults (adjusted OR 0.666, p = 0.091). **CONCLUSIONS:** In the case of ARTI, those with private insurance were substantially more likely to be prescribed with broad-spectrum antibiotics, where the society may be better off if such overuse of antibiotics could be reduced.

PRS45

INTEGRATED EDUCATIONAL PROJECT WITH INDIVIDUAL FEEDBACK FROM CLAIMS DATA LEADS TO IMPROVED ANTIBIOTIC PRESCRIPTION AND RESISTANCE DECREASE

Hupkova H[1], Foltan V[2], Hroncova D[3], Gezo M[1]
[1]General Health Insurance Fund, Bratislava, Slovak Republic, [2]Comenius University, Bratislava, Slovak Republic, [3]Mediforum, Non-commercial Educational Center of GSK, Bratislava, Slovak Republic

OBJECTIVES: Increasing antibiotics costs and resistance led to establishment of educational project S-MedDial under guarantee of the General Health Insurance Fund and related professional associations. The project evaluates prescription habits in respiratory infections, monitors antibiotics resistance and provides individual feedback to pediatricians. Introduction of new indexes and summary quality bar from selected eight indexes has enhanced comparison among physicians and their willingness to improve. **METHODS:** In the last round of the project the antibiotic prescription was analyzed for 97 doctors in 7 Slovak regions based on the retrospective claims data from September 2007 to March 2008 and compared with previous season data. Individual feedback was provided to practitioners during regional meetings together with expert presentations and educative leaflets. **RESULTS:** Every second child with respiratory infection was treated with antibiotics. The most frequent drugs in DDD were macrolides (22.6%), followed by beta-lactamase sensitive penicillins (19.5%) and cephalosphorines (18.4%). Best pediatricians (20% of the group) were significantly different compared to the rest in majority of the quality bar indexes: less patients treated with ATB (31% vs. 51%); lower proportion of ATB in treatment (in EUR: 51% vs. 73%, in DDD: 28% vs. 51%); lower ATB costs per patient (−15%); lower aminopenicillins usage in acute tonsillopharyngitis (6% vs. 16%); lower ATB ratio in acute sinusitis (43% vs. 57%); however high ratio of macrolides was the problem across all groups. Higher prescription quality and lower ATB costs correlated together. There was significant decrease of ATB costs induced by one pediatrician during six years of the project (−50%). **CONCLUSIONS:** S-MedDial project represents an option for increase of antibiotics prescription quality using the prescribing practitioners' education. Analysis of prescription habits is suitable not only for cost control but also for antibiotics prescription implications on resistance trends. Long-term integrated educational program leads to prescription habits change and better quality of care.

PRS46

TEN YEAR TRENDS IN PRESCRIPTION OF CHRONIC OBSTRUCTIVE PULMONARY MEDICATION AMONG ADULTS FROM 1996 TO 2005

Mehta H, Patel J, Parikh R, Aparasu RR, Sherer J
University of Houston, Houston, TX, USA

OBJECTIVES: Many guidelines were released during the past decade which tried to explain appropriate drug use for patients diagnosed with COPD. Medication use in COPD is also associated with issues related to adherence and side effects. The purpose of this study was to determine trends in prescription of COPD drugs in ambulatory setting and assess the rate of change in different drug classes. **METHODS:** We combined National Ambulatory Care Settings (NAMCS) and National Hospital Ambulatory Care Settings (NHAMCS) data from year 1996 to 2005. For trend analysis, data were stratified in 2-year periods. All adult visits with only primary diagnosis of COPD (ICD-9-CM: 491, 492, 496) were included in analysis and drug categories were identified using National Drug Codes. Descriptive analysis was carried out to determine patterns in drug prescription across years and four separate multivariate logistic models, dependent variable being drug class and independent variable being year, were constructed to identify rate of change in drug use across years while controlling for age, race, sex and smoking status. **RESULTS:** From 1996–97 to 2004–05, total COPD visits have been increased from 0.59% to 0.77%; Prescription of anticholinergics and inhaled corticosteroids increased (17.47% to 33.48% and 12.63% to 35.19% respectively), whereas beta-agonist had no upward trend (29.46% to 29.53%). In year 1996–97, beta-agonist was the highly prescribed drug (29.46%) whereas in 2004–05, anticholinergics (33.48%) and inhaled corticosteroids (35.19%) were the top prescribed medications. From year 1996 to 2005, prescription of anticholinergics (OR-1.088; CI-1.029–1.151) and inhaled corticosteroids (OR-1.132; CI-1.065–1.203) increased, beta agonist use has decreased (OR-0.916; CI-0.866–0.969) whereas there was no change for systemic corticosteroids (OR-1.034; CI-0.979–1.092). **CONCLUSIONS:** Overall drug utilization for COPD is increasing steadily. Use of bronchodilators is increasing which is in accordance with Global initiative for Chronic Obstructive Lung Disease (GOLD) guidelines. Corticosteroid use which is increasing should be based on risk to benefit ratio.

RESPIRATORY-RELATED DISORDERS – Conceptual Papers & Research on Methods

PRS47

COMPARING RISK ADJUSTMENT MODELS: PROPENSITY SCORE MATCHING, STANDARD REGRESSION ANALYSIS AND INSTRUMENTAL VARIABLE METHOD

Baser O[1], Dysinger A[2], Baser E[2]
[1]STATinMED Research / University of Michigan, Ann Arbor, MI, USA, [2]STATinMED Research, Ann Arbor, MI, USA

OBJECTIVES: To compare three common risk adjustment models when estimating health care costs. **METHODS:** Using data from U.S. claims databases, the effect of treatment on total health care expenditures among asthma patients was estimated. Reimbursement amounts were dollars paid by the health plan to the provider including patient co-payments and deductibles. Doctors' prescribing patterns were used as an instrumental variable for treatment choice. Propensity score matching was employed using the nearest neighbor matching algorithm. Generalized linear model was used as an alternative risk adjustment technique. **RESULTS:** Patients treated with control medication were younger, more likely to live in the northeast and south of the United States and have a higher Charlson comorbidity score, Elixhauser score and chronic disease score relative to patients treated with reliever medication. The difference between one year health care costs for reliever and controller medication was $2,345 by propensity score matching, $2,195 by generalized linear model, and $2,997 by instrumental variable approach. The difference was statistically significant. **CONCLUSIONS:** After adjusting for patient clinical and demographic characteristics, controller medication was less costly than reliever medication. The choice of risk adjustment was important. The technique that controlled for both observed and unobserved biases (instrumental variable technique) provided a difference of almost 30% higher than the other techniques.

PRS48

ASSESSING THE TIME-DEPENDENT NATURE OF COMORBIDITY INFLUENCE IN COPD

Kiri VA[1], MacKenzie G[2]
[1]PAREXEL International, Uxbridge, London, UK, [2]University of Limerick, Limerick, Ireland

OBJECTIVES In most outcome studies, comorbidity influence is modelled as constant with inherent assumptions that the duration of the condition does not influence prognosis and the effect persists. We challenge these assumptions as we demonstrate the time-dependent nature of the influence of certain comorbidities on patient survival. METHODS A retrospective cohort of 23,881 patients aged 50+ in the UK-GPRD at time of incident COPD diagnosis between 1990 and 1998 provided an appropriate setting. Each death patient was matched to as many survivors from the same practice as possible, of same age, sex and COPD duration. Some 18 binary comorbidities measured at the time of death were analysed in relation to mortality. Using conditional logistic regression model, we estimated hazard ratio (HR) for each comorbidity, adjusted for key baseline characteristics in two different models: In model A, we treated comorbidities as constant variables, whilst in B, we stratified each into two time-dependent categorical variables. We retained interactions between comorbidities which were significant. RESULTS Some 2938 dead patients were matched to 5792 survivors. We found evidence of time-dependent effects on risk for all but peripheral vascular disease and diabetes. Only in model B did we find evidence for peptic ulcer, moderate/severe liver disease and hemiplagia/paraplagia. The liver disease effect was significant only in those diagnosed within a year of death (HR > 15; p = 0.0162), where as the hemiplagia/paraplagia effect was found only in those diagnosed over a year ago (HR > 1.6; p = 0.0163). CONCLUSIONS To adequately adjust for comorbidity influence in outcome studies, we recommend stratification of each comorbidity on the basis of its duration (at start of follow-up for a cohort, or at time of outcome for a case-control study) to test for possible time-dependent effect. Adopting such approach as part of the exploratory analysis may improve the model and lead to more accurate estimations

PRS49

COMPARISON OF TWO METHODS FOR COVARIATE ADJUSTMENT WHEN ASSESSING HEALTH OUTCOMES IN THE U.S. HOSPITAL INPATIENT SETTING

Garvert W, Gemmen E, Bharmal M
Quintiles, Falls Church, VA, USA

OBJECTIVES: Demonstrate the differences in results from the use of two different methods for covariate adjustment when calculating differences in outcomes between groups. METHODS: The 2006 Nationwide Inpatient Sample hospital database was analyzed to estimate the clinical and economic impact to U.S. hospitals of air leaks during post-operative pulmonary surgery. For all stays with pulmonary surgery, length of stay (LOS), total charges, and in-hospital mortality rates were compared between stays including an air leak vs. stays without an air leak, while using two different methods to adjust for covariates: 1) multivariate regression analysis (ordinary least square regression for LOS and total charges, and logistic regression for in-hospital mortality) while controlling for age, gender, and hospital region; 2) 1:1 matched case-